120th Ave NE

Project Memorandum

TITLE: **Segments 2 & 3 - Documentation of Substantially Complete Preliminary Engineering**

DATE: **08-23-2010**

PREPARED BY: **Parsons Brinkerhoff**

This memorandum documents detailed elements of design completed for Segments 2 & 3 of the 120TH AVE NE street improvement project between NE 8TH Street and Northup Way (PROJECT), and serves as evidence of a substantially complete preliminary engineering effort towards the TIGER II grant application package due on August 23, 2010. Table 1 below lists the plan sheets that can be made available after August 23, 2010 (upon request) to further support the evidence that the preliminary engineering supporting the grant package is substantially complete.

The PROJECT is situated in the City of Bellevue east of I-405 between NE 8th Street to the South and Northup Way to the north. The length of roadway improvements for the PROJECT is approximately 5,850 LF. Design for 120TH AVE NE was closely coordinated with the designs being prepared by the Washington State Department of Transportation (WSDOT) I-405\SR 520 Braids project, Spring District development project, Sound Transit East Link project, NE 15TH/16TH multimodal corridor project, the 120TH AVE NE Segment 1 project, and property owners situated along the corridor. The Spring District project is a private development planned to build office, retail and residential buildings and street infrastructure bounded on four sides by 120TH AVE NE to the west, NE 16TH Street to the north, 124TH Avenue NE to the east, and NE 12TH Street to the south. A new four legged at grade signalized intersection is proposed at NE 120TH AVE. and NE 15TH as part of the NE 15TH/16TH Streets multi-modal corridor project. Sound Transit with its dual train tracks will be crossing under 120TH AVE NE just north of the NE 15TH Street intersection. The braids project led by WSDOT is a freeway widening project that impacts the north terminus of NE 120TH that ties in with Northup Way. 120TH AVE NE Segment 1 improvements adjacent and to the south of the PROJECT are being led by the City of Bellevue.

Table 1

SHEET ID.	NO. OF SHEETS	TITLE
SEGMENT 3		
GN1	1	COVER SHEET
RP01 to RP11	11	ROADWAY AND PAVING PLANS AND PROFILES
RS01	1	ROADWAY SECTIONS
SP01 to SP11	11	SITE PREPARATION PLANS
DW01 to DW10	10	DRIVEWAY PLANS AND PROFILES
DR01 to DR12	11	DRAINAGE PLANS
RW01 to RW23	23	WALL PLAN AND ELEVATION
CH01 to CH12	11	SIGNING AND PAVEMENT MARKING PLANS
IP01 to IP11	11	ILLUMINATION/INTERCONNECT PLAN
SG01	1	SIGNAL PLAN
TOTAL	**91**	**TOTAL NUMBER OF SHEETS AS OF AUGUST 23, 2010 – GRANT PACKAGE**

Note: Additional Sheets for Segments 2 & 3 to be posted as they are prepared

ROADWAY

- Roadway design criteria established for the project
    - Functional Classification – Urban Arterial
    - Design Speed – 35 MPH
    - Posted Speed – 30 MPH
    - Maximum Grade – 6%
- Roadway Typical Section established for the project
    - 5 lane roadway – 2 x 11’ thru lanes in each direction + 1 x 12’ Center Two Way Left Turn Lane
    - 1 x 5’ dedicated bike lanes adjacent to the outside lanes in each direction (1’ overlaps with the Curb and Gutter section)
    - 1 x 1.5’ Curb and Gutter section adjacent to the bike lanes in each direction
    - 5’ planter strip + 8’ Sidewalk behind the curb on both sides of roadway (Minimum width of planter is 5’ and Sidewalk is 6’)
    - The roadway pavement build up will be Hot Mix Asphalt over a crushed surfacing base course.
    - The total roadway excavation including haul is estimated at 48,000 Cubic Yards
    - The total gravel borrow including haul is estimated at 39,600 Cubic Yards
- Roadway Geometrics established for the project
    - Horizontal and Vertical alignments were set to meet the established project design criteria, minimize stream, wetland and adjacent property impacts, accommodate future projects at NE 15TH/ 16TH, and maximize safety of motorized and non-motorized traffic.
    - Driveway access to all existing adjacent properties was established, and provisions were made to not preclude access to future known developments such as the Spring District
        - Sight lines at driveway locations were prepared to assess stopping sight distance
    - Demolition Plans prepared to show the removals and impacts to adjacent properties

URBAN DESIGN & LANDSCAPING

- Established Urban Design and Landscaping criteria for the corridor that conform to the current Land Use code and the Bel-Red Corridor plan
- Coordinated with the adjacent land use patterns to establish an urban design vision for the 120TH AVE NE corridor

- Coordinated with the Spring District development plans to integrate the street design with adjacent developments. A gateway feature at the NE corner of NE 12TH Street and 120TH AVE NE
- Pedestrian surface crossing of 120TH AVE NE and a pedestrian view point established at the Kelsey Creek Crossing
- Established desirable criteria for locating underground and overhead utilities along the corridor
- Intermittent median landscaping opportunities established to transition between distinct segments within the 120TH AVE NE corridor
- Street trees at 30 foot centers integrated with illumination, driveway entrances, and surrounding land use patterns.

DRAINAGE

- The following design criteria has been established for the project:
    - MR1 – MR5 apply to the new and replaced impervious surfaces and the land disturbed
    - MR1 – MR9 apply to the new impervious surfaces and the converted pervious surfaces
    - MR6 – Runoff Treatment (Enhanced) applies to the new impervious surfaces and the converted pervious surfaces
    - MR7 – Flow Control applies to the new impervious surfaces and the converted pervious surfaces
- Existing drainage basins and storm systems have been surveyed and field verified. The project consists of two Threshold Discharge Areas (TDAs). The northern portion of Segment 3 drains to the West Tributary of Kelsey Creek Basin. The southern portion of Segment 3 drains to the Sturtevant Creek Basin.
- Flows from off-site properties located adjacent to the corridor that currently drain to the existing 120TH AVE NE storm systems will be intercepted and routed through the corridor to the respective natural discharge location. The project proposed conveyance system will be sized to adequately convey this tributary runoff.
- City of Bellevue Natural Drainage Practices (NDPs) in the form of Bioretention/Infiltration Cells will be used to fully meet the runoff treatment and flow control requirements for the project. Each cell will be approximately 5 feet wide by 150 feet in length. There will be 6 cells in the West Tributary Basin, and 3 cells in the Sturtevant Creek Basin. Enhanced runoff treatment will be provided in the bioretention soil mix/vegetation portion of these cells. The flow control requirement will be partially met in each cell via infiltration into native soils. The remaining flow control requirement will be fulfilled via orifice controlled detention in the cells.
- Stream mitigation includes replacing the existing non-fish passable culvert at the Kelsey Creek crossing under 120TH AVE NE. A new box culvert will replace the existing storm sewer crossing under the roadway. In addition, approximately 200 LF of new stream channel likely will be daylighted along the corridor to facilitate potential future fish use.
- Approximately 0.30 ACRES of wetlands and 0.84 ACRES of wetland buffer will be cleared and filled by the roadway improvements. Wetland and buffer mitigation will likely include creating new wetlands on City owned parcels. Other mitigation options being considered include purchasing mitigation bank credits, or fee in-lieu sponsored by King County.

UTILITIES

- Existing City owned and Franchise utilities have been identified within the project corridor via as-built drawings and field survey.
- City owned public utilities consist of the potable water and sanitary sewer systems.

- Potable Water – the existing potable water system consists of 12-inch ductile iron pipe. The City of Bellevue has indicated that the existing water system has adequate capacity to accommodate future redevelopment, so no upgrades to this system will be required. However, the replacement of up to 500 lineal feet of water main may be necessary as a result of the road grade change (fill) in the area of the future Sound Transit underpass.
- Sanitary Sewer – the existing sanitary sewer systems consists of PVC pipe ranging in diameter from 8 to 12 inches. The City of Bellevue has indicated that a portion of the existing sanitary sewer may need to be upgraded in order to accommodate the future redevelopment planned for this area. Confirmation from the City of Bellevue on the limits of the upgrade, and the required pipe size is pending.

- Franchise Utility systems consist of:
  - Puget Sound Energy (PSE) power – existing power currently consists of a 12kV distribution system, a portion of which is underground, with a small segment of overhead. The overhead portion of this system is currently on the east side of 120TH AVE NE, and will likely be relocated to the west side of the road. PSE has indicated that a 115kV overhead transmission system may also be desired along the corridor.
  - Puget Sound Energy (PSE) gas – existing gas currently consists of a 2 to 4 inch system that PSE has indicated will likely need to be upgraded to 6 inch system.
  - Communications – Verizon/ELI and Comcast joint utility trenches are located on the east side of 120TH AVE NE. These systems will be relocated only as necessary to avoid conflicts with future improvements.

STRUCTURES

- The general topography of the 120TH AVE NE corridor is such that the west side of the roadway is situated at a lower elevation compared to the roadway, and the east side is situated higher than the roadway surface
- The profile of the roadway is being raised between NE 12TH street and NE 15TH/16TH street to facilitate an undercrossing for the future Sound Transit Light Rail line
  - There will be 3190 LF of retaining walls in Segment 3
    - 1850 LF of Fill walls – 18 FT maximum height and 5 FT average height
    - 1340 LF of Cut walls - 12 FT maximum height and 4-5 FT average height
- Total wall area in Segment 2 is estimated at 7,800 SF.
- Wall types being considered vary from Gravity Block walls, MSE walls, soldier pile, and geotextile walls throughout Segment 2 & 3.
- Surface treatments for the walls will follow a theme that will be prevalent throughout the corridor and will conform to the urban design criteria established in the Bel-Red Corridor plan as well as City of Bellevue standards.
- Walls will be constructed with locally manufactured material and can be constructed with a local workforce of modest skill.

TRAFFIC (PAVEMENT MARKINGS, SIGINING, SIGNALS, AND TRAFFIC CONTROL)

- Traffic Data for NE 120TH AVE. between NE 8TH and BEL-RED ROAD
  - ADT (2015) – 18,400
  - ADT (2030) – 21,800
  - % Trucks – 5%
- Traffic Data for NE 120TH AVE. between BEL-RED ROAD and NE 12TH

    - ADT (2015) – 17,400
    - ADT (2030) – 22,500
    - % Trucks – 5%
- Traffic Data for 120TH AVE NE between NE 12TH Street and NE 15TH Street
    - ADT (2015) – 14,400
    - ADT (2030) – 17,500
    - % Trucks – 5%
- Traffic Data for 120TH AVE NE between NE 15TH Street and Northup Way
    - ADT (2015) – 7,000
    - ADT (2030) – 8,800
    - % Trucks – 5%
- A total of 8 junction boxes and conduit crossings will be provided to accommodate a traffic signal at the future intersection of NE 15TH Street and 120TH AVE NE New vehicle and bicycle detector loops will be installed on the northbound leg of Northup Way/120TH AVE NE
- A new Type 1 signal pole with a supplemental vehicle signal and pedestrian signal will be provided on the southwest corner of Northup Way/120TH AVE NE to improve the signal visibility for northbound traffic.
- A pan-tilt-zoom closed circuit television (CCTV) camera will be installed at Northup Way/120TH AVE NE
- Conduits across 120TH AVE NE and junction boxes will be provided at Kelsey Creek to facilitate the installation of a future midblock crossing signal.
- Single-mode fiber optic communication cable will be provided along one side of 120TH AVE NE to interconnect traffic signals between Northup Way and NE 12TH Street.
- There will be approximately 40 new signs for speed limits, bicycle lanes, and lane use control at intersections. These signs will be placed more uniformly than the current installations, increasing visibility and compliance.
- There will be two overhead cantilever-style sign installations along 120TH AVE NE approaching Northup Way. These signs will inform motorists of the destinations for various turning lanes in advance, facilitating safer and more efficient movement of vehicles, especially trucks, which is proven to result in a reduced incidence of sideswipe and rear-end collisions.
- Construction of Segment 2 would occur over a twelve month period, and will be complete prior to the beginning of Segment 3 construction. Construction of Segment 3 would occur over twelve month period.
- A minimum of one lane would be open for traffic in each direction along 120th AVE NE as the project is constructed in phases (Phase 1 and Phase 2), each occurring on one-half of the final alignment. Only Bel-Red Road would be closed to traffic for 9-12 months during the realignment of 120TH AVE. NE bear NE 8TH Street. There will be no road closures in Segment 3.

ILLUMINATION

- Bellevue Standard illumination with LED fixtures on top of 30 foot tall concrete poles.
- Spacing of the lights will be 115 LF staggered on both sides of the roadway.
- Light poles to be located in the 5’ planter strip on both side of the roadway.
- There are a total of 34 light poles within Segment 3.
- Light poles on opposite sides of the street are spaced closely at the Kelsey Creek Pedestrian. crossing to increase the light levels at this future pedestrian crossing.

RIGHT OF WAY

- There are thirty three property sites and twenty three property ownerships adjacent to 120TH AVE NE in Segments 2 & 3.
- A range of property impacts were identified throughout Segments 2 & 3 and are listed below:
    - Three sites are total fee takes and area all within Segment 2. There are no total takes in Segment 3.
    - Eleven sites in Segment 2 and nineteen sites in Segment 3 are partial fee takes including costs to cure for parking, building, and access impacts.

COST ESTIMATE

- Total Segment 2 & 3 Construction and Right of Way costs for the project is estimated at $38,926,000
    - Total Construction Cost for Segments 2 & 3 is estimated at $19,402,000.
    - Total Right of Way Cost for Segments 2 & 3 is estimated at $19,524,000.